

WHAT IS CLAIMED IS:

1. A substrate useful for making an endless belt in a papermaking machine application comprising a plurality of preformed layers and a polymeric coating or impregnating material or rubber material that is part of a respective layer, wherein each preformed layer is a textile layer or a textile layer coated/impregnated with resin or the rubber material, and at least one layer of which contains a matrix of reinforcing components.
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2. The substrate according to claim 1 wherein the layers are stacked in the form of a laminate.
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3. The substrate according to claim 2 wherein the required number of layers is stacked for a particular application of the belt in a papermaking machine.
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4. The substrate according to claim 1 wherein the preformed layers are comprised of woven, nonwoven or spiral wound strips of woven and nonwoven materials.
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5. The substrate according to claim 4 wherein the nonwoven materials are spun bonded, wet laid, air laid, knitted, extruded, or spiral-linked.
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6. The substrate according to claim 1, wherein the substrate is coated on at least one outside surface with a polymeric resin material or the rubber material.
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7. The substrate according to claim 6, wherein the polymeric resin material is a thermoplastic resin or thermosetting polymer.
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8. The substrate according to claim 7 wherein the resin is from the group consisting of polyurethane, polypropylene, polyethylene, and silicone.
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9. The substrate according to claim 1, wherein at least one preformed layer is comprised of yarns having a circular cross section.
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10. The substrate according to claim 1 wherein the reinforcing components are fabricated from monofilaments, multifilaments, continuous fine filaments or spun yarns of synthetic fibers.

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11. The substrate according to claim 10, wherein the filaments or fibers have profiled or multi-lobed cross sections.

12. The substrate according to claim 1, wherein an outer surface of
10 the substrate has grooves or blind-drilled holes.

13. The substrate according to claim 1, wherein the layers include:
15 a. a surface layer;
b. an intermediate layer;
c. a reinforced central core layer; and
d. a backing layer.

14. A method of making a substrate of an endless belt to be used in papermaking applications comprising the steps of:

20 a. coating or impregnating at least one layer of a plurality of layers of a material, at least one of which contains a reinforcing material, to form a preformed coated or impregnated layer;
b. combining the coated or impregnated layers to form a structure; and
25 c. processing the structure to form a laminate.

15. The substrate according to claim 14, wherein at least one layer is comprised of yarns having a circular cross section.

30 16. The method according to claim 14 wherein the layers are comprised of monofilaments, multifilaments, continuous fine filaments, or staple fibers.

17. The method according to claim 16 wherein the filaments or fibers have profiled or multi-lobed cross-sections.

5 18. The method according to claim 16 further comprising a step of creating grooves or blind-drilled holes in an outer surface of the substrate.

10 19. The method according to claim 14 wherein the at least one layer is coated or impregnated with a polymeric resin.

15 20. The method according to claim 19 wherein the polymeric resin is from the group consisting of polyurethane, polypropylene, polyethylene, and silicone.

21. The method according to claim 19 wherein the polymeric resin is in the form of a sheet.

22. The method according to claim 14, wherein the reinforcing material is comprised of woven, nonwoven or spiral wound strips of woven and nonwoven materials.

23. The method according to claim 22, wherein the nonwoven materials are spun bonded, wet laid, air laid, knitted, extruded, or spiral-linked.

25 24. A method of making a substrate of an endless belt to be used in a papermaking application comprising the steps of:

a. combining preformed layers of a material containing a matrix of a prepolymer and a curing agent to form a structure;

b. processing the structure to form a laminate; and

30 c. curing the structure.

25. A method of producing a papermaker's process belt comprising the steps of:

coating or impregnating at least one layer of a plurality of layers of a preformed material with a polymer resin or rubber material, wherein at least one layer includes a reinforcing component for stability in a machine direction (MD) or a cross-machine direction (CD) of the belt;

combining the layers to form a substrate or base substrate; and forming the substrate or base substrate into an endless belt.

10 26. The method according to claim 25, further comprising the step of coating the belt with a polymeric resin or a rubber material on at least one outside surface.

15 27. The method according to claim 25, wherein said layers are laminated together by promoting a chemical reaction between respective layers.

28. The method according to claim 25, wherein said layers are laminated together using heat and pressure.

20 29. The method according to claim 25, wherein a respective layer is of a construction taken from the group consisting essentially of woven, or nonwoven, such as spiral-link, MD or CD yarn arrays, knitted, extruded mesh, or material strips which are ultimately spiral wound to form a substrate having a width greater than a width of the strips.

25 30. The method according to claim 25, wherein a component in a respective layer is one of thermoplastic, thermoset, reactive materials or rubber material.

30 31. The method according to claim 25, wherein a respective textile layer is made by one of spun bonded, wet laid and air laid processes impregnated with a polymer resin or a rubber material.

32. A papermaker's process belt comprising layers of preformed material that are first coated with a polymer resin or rubber material and then combined to form a substrate of the belt, wherein at least one layer includes a 5 reinforcing component for stability in a machine direction (MD) or a cross-machine direction (CD) of the belt.

33. The belt according to claim 32, wherein the finally formed belt has a resin-coat or a rubber material on at least one outside surface.

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34. The belt according to claim 32, wherein the layers are laminated together by promoting a chemical reaction between respective layers.

35. The belt according to claim 32, wherein the layers are laminated 15 together using heat and pressure.

36. The belt according to claim 32, wherein a respective layer is of a construction taken from the group consisting essentially of woven, or nonwoven, such as spiral-link, MD or CD yarn arrays, knitted, extruded mesh, 20 or material strips which are ultimately spiral wound to form a layer having a width greater than a width of the strips.

37. The belt according to claim 32, wherein the polymer resin is one of thermoplastic, thermoset, or reactive materials.

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38. The belt according to claim 32, wherein a respective textile layer is made by one of spun bonded, wet laid and air laid processes impregnated with resin or a rubber material.

30 39. The substrate according to claim 1, wherein the polymeric resin material is a thermoplastic resin or thermosetting polymer.

40. The substrate according to claim 1 wherein the resin is from the group consisting of polyurethane, polypropylene, polyethylene, and silicone.

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